UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/037,670	01/03/2002	Eliel Louzoun	42390P11425	8281

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EXAMINER
LEFKOWITZ, SUMATI

ART UNIT	PAPER NUMBER
2112	

DATE MAILED: 10/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>03 January 2002</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-80</u> is/are pending in the application.

  4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-80</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>03 January 2002</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

  Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

  Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

  a)☐ All b)☐ Some * c)☐ None of:

  1.☐ Certified copies of the priority documents have been received.

  2.☐ Certified copies of the priority documents have been received in Application No. _____.

  3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
  application from the International Bureau (PCT Rule 17.2(a)).

  * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
  Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
  Paper No(s)/Mail Date. _____ .
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: _____.

DETAILED ACTION

1.   Claims 1-80 are pending.

Specification

2.   The abstract of the disclosure is objected to because

-    it fails to mention that the first, second, and third indicators are unlocked, locked, and

     locked semaphore states, making the abstract difficult to understand

-    on lines 4-5, the recitation of "reducing by one a number of requesters" does not seem

     to consistent with the specification

Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

3.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making
> and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it
> pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode
> contemplated by the inventor of carrying out his invention.

Claims 17 and 62 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply

with the written description requirement. The claim(s) contains subject matter which was not

described in the specification in such a way as to reasonably convey to one skilled in the relevant

art that the inventor(s), at the time the application was filed, had possession of the claimed

invention. In particular, claim 17 recites that the requesters comprise registers, which does not

appear to have support in the specification, which recites that the shared resource comprises

registers but does not recite that the requesters comprise set-by-read and set-by-write registers.

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5.   Claims 1-4, 7, 10, 11, 13-18, 20-28, 33-36, 46-49, 52, 55, 56, 58-63, 65-67, 70-72, 74, 75,

77, and 78 are rejected under 35 U.S.C. 102(b) as being anticipated by Buch, 5,669,002.

As to claims 1-4, 7, 10, 11, 13, and 14, 1: Buch discloses a method, comprising:

determining, in response to being accessed by a first requester (i.e., processor), whether a

component is available; and replacing, if the component is available, a first indicator (i.e., G0

vector, indicating unlocked state) indicating that the shared resource is available, with a second

indicator (i.e., unique ID vector of locking processor) reducing access to the component, to

permit access to the component by the first requester, 2: further comprising: indicating, if the

component is unavailable (i.e., if lock register holds unique vector ID of another processor), the

second indicator to the first requester to prohibit access to the component by the first requester,

3: wherein being accessed by the first requester comprises the first requester executing a read, 4:

further comprising indicating the first indicator to the first requester to indicate that the first

requester can access the component, 7: wherein determining, in response to being accessed by

the first requester, whether the component is available comprises determining a presence of the

first indicator, 10: further comprising receiving, by execution of an operation by a second

requester upon completion of access to the component by the second requester, a third indicator

(i.e., G0 vector) increasing access to the component to replace the second indicator, 11: wherein

the operation comprises a write of the third indicator, 13: wherein the first requester and the

second requester comprise one requester, 14: wherein the first indicator and the third indicator

comprise a same indicator (i.e., G0 vector) (note column 2, line13 – column 3, line 5 and column

3, line 28 – column 5, line 60).

       b.   As to claims 15, 16, 20-26, 60, 61, 65-67, 70, and 71 the claim limitations have

already been discussed with respect to claims 1-3, 6-10 and 13 above.

       c.   As to claims 17 and 62, in light of the 112/1st rejection above, the claim is being

interpreted as the component comprising registers. Buch discloses that the component comprises

registers (note column 3, lines 28-45).

       d.   As to claims 18 and 63, Buch discloses that the registers comprise set-by-read

registers read by processes attempting to access the component (note column 2, lines 23-36,

column 4, line 65 – column 5, line 16 and column 5, lines 32-45).

       e.   As to claims 27, 28, and 33-36, Buch discloses a method of obtaining access to a

shared resource, comprising: accessing a register (i.e., lock register); and changing, as a result of

accessing the register if the register detects a first value (i.e., unlocked status vector G0);

indicating that the shared resource is available, the first value to a second value (i.e., node ID

vector of accessing device/process); and limiting access to the shared resource (i.e., locking

access to devices/processes with IDs other than the one matching the second value), 28: wherein accessing the register comprises reading the register, 33: further comprising: receiving from the register the first value (i.e., unlocked status vector G0) indicating that the shared resource is available; accessing the shared resource; and changing upon completion of access to the shared resource, the second value (i.e., locked status value – locking device's ID) to a third value (i.e., unlocked status vector G0) increasing access to the shared resource, 34: wherein changing the second value to the third value comprises writing the third value to the register (note column 2, lines 50-59, column 4, lines 43-64, column 5, lines 17-30, column 5, lines 46-60), 35: wherein the first value, the second value and the third value comprise variables, 36: wherein the first value and the third value comprise a same variable (note column 2, line 13 – column 5, line 60).

f.   As to claims 46, 47, 48, 49, 52, 55, 56, 58, and 59 the claim limitations have already been discussed with respect to claims 1, 2, 3, 4, 7, 10, 13, and 14 above.

g.   As to claims 72, 74, 75, 77, and 78, Buch discloses an apparatus (i.e., computer system of Figure 1) comprising: a resource (note Figure 2, shared records); a storage area in the resource (note Figure 2, element 78 – lock registers); a first value (i.e., unlocked state vector G0) in the storage area, which the storage area changes to a second value (i.e., processor node ID vector) in response to access to the storage area; and the second value in the storage area, 74: wherein the storage area comprises a register (i.e., lock registers), 75: wherein the access to the storage area comprises a read of the storage area, 77: wherein the first value indicates that the resource is available, 78: wherein the second value reduces access to the resource (note column 2, line 1 – column 5, line 60).

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described.as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the

claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

claims was commonly owned at the time any inventions covered therein were made absent any

evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c)

and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7.   Claims 5, 6, 19, 29-31, 40-45, 50, 51, 64, and 76 are rejected under 35 U.S.C. 103(a) as

being unpatentable over Buch, 5,669,002 (hereinafter Buch).

a.   As to claims 5, 50, and 76, although Buch fails to disclose that being accessed

comprises the first requester executing a write of the second indicator, Buch does disclose that

being accessed comprises the lock register controller executing a write of the second indicator

(note column 2, lines 13-59).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the

invention to have the registers written to by any equivalent means, including by the processes

themselves, or by a lock register controller, since the underlying concept of writing a values to

the registers to indicate that the shared resource is locked is not impacted by the manner in which the write is performed.

b.   As to claims 6 and 51, Buch discloses that the second indicator comprises an identifier of the first requester (note column 2, lines 13-59).

c.   As to claims 19, 29, 40, 41, and 64, although Buch fails to disclose that the registers comprise set-by-write registers that are written to by the processes attempting to access the component, Buch does disclose that the registers are written to in response to processes attempting to access the component (note column 2, lines 13-36 and column 4, lines 10-35 and column 4, line 65 – column 5, line 16 and column 5, lines 31-45).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have the registers written to by any equivalent means, including by the processes themselves, or in response to a read access to the registers by the processes, since the underlying concept of writing a values to the registers to indicate that the shared resource is locked is not impacted by the manner in which the write is performed.

d.   As to claims 30, 31, 42, and 43, Buch discloses that the second value comprises an identifier of a process and reading the register to determine that the register contains the identifier (note column 2, lines 13-48).

e.   As to claims 44 and 45, Buch discloses that replacing the second indicator with the third indicator comprises writing the third indicator to the register, wherein the first indicator and the third indicator comprise the same indicator (note column 4, lines 43-64).

8.   ·Claims 32 and 73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buch,

5,669,002 (hereinafter Buch) in view of Dror, 5,276,886.

As to claims 32 and 73, Buch fails to disclose that the shared resource comprises a

peripheral device in a computer system.

Dror discloses that the shared resource comprises a peripheral device in a computer

system (note column 1, lines 7-60).

It would have been obvious to one of ordinary skill in the art at the time of the invention

to have the shared resource be a peripheral device, as Dror teaches, in the system of Buch so as

to allow for the sharing of peripheral device among multiple processors and processes without

errors and synchronization problems, as Dror teaches at column 1, lines 16-42.

9.   Claims 12, 37-39, and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Buch, 5,669,002 (hereinafter Buch) in view of Montgomery et al., 6,529,933 (hereinafter

Montgomery).

a.   As to claims 12 and 57, Buch fails to disclose that the first requester and the

second requester comprise processes.

Montgomery discloses that the first and second requesters comprise processes (note

column 1, lines 15-40).

It would have been obvious to one of ordinary skill in the art at the time of the invention

to have the requesters be processes, as Montgomery teaches, in the system of Buch so as to allow

multiple processes to coordinate their work on a common task, as Montgomery teaches at

column 1, lines 15-22.

b.   As to claims 37-39, the claimed elements have already been discussed with

respect to claims 15, 16, and 18 above, with the exception of the steps comprising: reading and

writing of the registers by a process.

Buch fails to disclose that the reading and writing of the register is done by a process.

Montgomery discloses that the a process does the reading and writing of a semaphore

(note column 1, lines 15-40).

It would have been obvious to one of ordinary skill in the art at the time of the invention

to have the requesters and therefore the readers and writers of the lock registers of Buch be

processes, as Montgomery teaches, so as to allow multiple processes to coordinate their work on

a common task, as Montgomery teaches at column 1, lines 15-22.

10.   Claims 8, 9, 23, 24, 53, 54, 68 and 69 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Buch, 5,669,002 (hereinafter Buch) in view of Marshall et al., 6,529,983

(hereinafter Marshall).

a.   As to claims 8, 23, 53, and 68, Buch fails to disclose that wherein determining, in

response to being accessed by the first requester, whether the component is available comprises

determining based on an external indicator that the component is available.

Marshall discloses that determining whether a component is available comprises

determining based on an external indicator that the component is available (note column 12, line

53 – column 13, line 9).

It would have been obvious to one of ordinary skill in the art at the time of the invention

to employ the use of an external indicator to determine if the component is available, as Marshall

teaches, in the system of Buch so as to allow for the locking of multiple resources, as Marshall

teaches at column 13, lines 4-8.

b.   As to claims 9, 24, 54, and 69, Marshall discloses that the external

indicator comprises a flag (i.e., condition code register comprises multiple bits/flags indicating

various status conditions).

11.   Claims 79 and 80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buch,

5,669,002 (hereinafter Buch) in view of Schiffleger, 5,526,487.

a.   As to claim 79, Buch fails to disclose that the storage area is linked to other

storage areas containing the first value.

Schiffleger discloses that the storage area is linked to other storage areas containing the

first value (note column 1, lines 36-59 and claims 1 and 10).

It would have been obvious to one of ordinary skill in the art at the time of the invention

to employ the use of a storage area linked to other storage areas containing the first value, as

Schiffleger teaches, in the system of Buch so as to allow for the limiting of access by a plurality

of devices to shared resources within a single cluster, as Schiffleger teaches at column 1, lines

36-59.

b.   As to claim 80, Schiffleger discloses that the other storage areas change the first

value to the second value when the storage area changes the first value to the second value (note

column 1, lines 36-59 and claims 1 and 10).

Conclusion

12.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure, as the prior art teaches or suggests handling semaphores without bus locking.

US Patents: 6,446,149   Moriarty et al.   5,987,550   Shagam

               5,968,143   Chisholm et al.

Japanese
Patents :   10-177560 Maruyama

13. · Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Sumati Lefkowitz whose telephone number is 703-308-7790.

The examiner can normally be reached on Monday-Friday from 6:00-2:30.

        If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Mark Rinehart can be reached at 703-305-4815.

        The fax phone numbers for the organization where this application or proceeding is

assigned are:

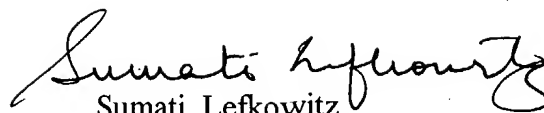   703-746-7238   for After-Final communications

        703-872-9306   for Official communications

        703-746-5661   for Non-Official/Draft communications

        Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the receptionist whose telephone number is 703-305-3900.

Art Unit: 2112

Sumati Lefkowitz
Primary Examiner
Art Unit 2112

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July 12, 2004